

[0015] FIG. 3 is a side view of a reel frame, around which the reel strip is adhered, showing a control cable to the OLED display and to an electrical connector slip ring for maintaining electrical contact with a controller as the reel rotates about an axis.

[0016] FIG. 4 is a perspective view of three stationary reels, each including an OLED display that simulates the movement of symbols on a rotating reel.

[0017] FIGS. 5, 6, and 7 illustrate the physical reel symbols with superimposed images created by a transparent display screen in front of the reels.

[0018] FIG. 8 is a block diagram of certain functional blocks in a gaming machine incorporating the present invention.

#### DETAILED DESCRIPTION

[0019] FIG. 1 is a front view of a gaming machine that incorporates the present invention. Many other types of gaming machine designs may also be used with the inventions.

[0020] A player deposits a coin into coin slot 1 to obtain a playing credit. Other devices for generating playing credits include bill acceptors, ticket slots, card slots, and any other known device. A starting handle 2 may be pulled by the player to start the game. Displays 3 display any useful information, such as the amount of the last win, the total credits, and the number of coins deposited.

[0021] Player control buttons 4 perform various functions such as pay out (coins), bet, max bet, and start (spin reels). Reel strips 5, 6, and 7 are revealed through transparent windows 8, 9, and 10, respectively.

[0022] A coin tray 11 receives coins paid out by the gaming machine.

[0023] Top display glass 14 surrounds the transparent windows 8, 9, and 10 and displays any information or design. Bottom display glass 16 typically displays the logo of the game.

[0024] By betting a sufficient number of credits, three pay lines A, B, and C may be activated, where designated symbol combinations across an activated pay line pay predetermined awards to the player. Conventional aspects of reel-type gaming machines are extremely well known and need not be described herein.

[0025] FIG. 2 is a perspective view of three reels with reel strips 5, 6, and 7 around the periphery of the reels. A reel is formed of a light plastic frame 14 (FIG. 3). Stepper motors 22, 23, and 24 rotate a predetermined amount with each pulse applied to the stepper motor. As in a typical gaming machine, the final positions of the three reels are predetermined by a random number generator within the gaming machine. The required number of pulses to rotate the reels to their predetermined positions is determined by a microprocessor, and the pulses are applied to each stepper motor. The final positions of each reel represent displayed symbols in windows 8, 9 and 10. The appropriate award for any winning symbol combination across a pay line is then paid to the player.

[0026] To add excitement to the game and to distinguish the gaming machine from other reel-type gaming machines,

one or more of the symbols on the reel strip for one or more of the reels is a color OLED display 26. The particular symbol displayed by the OLED display 26 in FIG. 2 is the symbol 7. An OLED display controller selectively provides energization signals to X and Y coordinates in an LED array to create a bright image in any color. The control of an OLED display and the construction of a flexible OLED display necessary to form any symbol are well known in the field of OLED display technology.

[0027] In FIG. 3, the flexible OLED display 26 portion attached to the reel frame 14 is shown having an electrical cable 30 connected to a slip connector 32, which includes electrical contacts that rotate with the shaft of the stepper motor and stationary contacts that make electrical contact to corresponding rotating contacts to provide uninterrupted electrical contact as the reels are rotating. Such rotatable contacts are well known. Examples of such contacts include U.S. Pat. Nos. 6,331,117 and 4,583,798, incorporated herein by reference. Cable 30 includes power and signal wires. The resolution (LEDs per unit length) can be virtually any number, such as five per centimeter. Decoding circuitry may be fixed on the reel frame 14 so that serial or parallel encoded signals through cable 30 can be decoded by circuitry proximate to display 26 to energize any number of LEDs in display 26.

[0028] The control of display 26 is performed in software in conjunction with known display controller technology, which stores a pattern of bits in a memory corresponding to the image to be displayed. An energization scheme of display 26 may be a raster scan that selectively energizes the LEDs by row and column at a rapid rate.

[0029] As the reels are spinning, the player is attracted by the illuminated symbols on the OLED displays 26. When the reels stop spinning, the OLED displays 26 may change its presentation depending upon the outcome of the game, such as if the special symbols displayed by OLED displays 26 are involved in a winning combination. There may be one or more symbols displayed by an OLED display 26 on a reel strip. Display types other than an OLED may also be used.

[0030] In one embodiment, shown in FIG. 4, a flexible OLED display 34, 35, 36 forms a visible portion of each stationary reel. The portions 37, 38, and 39 of the reels are not visible to the player and may even be deleted.

[0031] When a player presses the start button 4 or pulls lever 3, the symbols on the OLED displays 34, 35, and 36 scroll down (or up), giving the illusion to a player that reels are actually spinning. Scrolling of an LED display is well known and may involve simply shifting prestored symbol-forming bits in a video memory as is done in a video gaming machine.

[0032] Accordingly, the player is provided the excitement of a bright multi-colored display, and the gaming machine manufacturer can produce an inexpensive gaming machine without moving parts, such as stepper motors.

[0033] When the stationary reels appear to stop, the OLED symbols may change into any form to highlight a symbol, or to convey information, or to show a celebratory display, or to identify the winning symbol combination, etc. A displayed symbol can randomly turn into any other symbol, such as a wild card symbol with added functions. Virtually anything performed in conventional video-type gaming